

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

**TCS 3191 – CLIENT-SERVER COMPUTING**

( All sections / Groups )

17<sup>th</sup> October 2016  
9.00 a.m. – 11.00 a.m.  
( 2 Hours )

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**INSTRUCTIONS TO STUDENTS**

1. This question paper consists of 4 pages including cover page with 6 questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the Answer Booklet provided.

**Instruction: Answer ALL questions.****QUESTION 1 (10 marks)**

- a) Describe **THREE** main components of client-server computing. What is the main function of middleware?  
(4 marks)
- b) Discuss the **FOUR** best situations for Remote Data Access (RDA) deployment.  
(4 marks)
- c) Discuss **TWO** reasons why there is a need for SQL Middleware.  
(2 marks)

**QUESTION 2 (10 marks)**

- a) In a three-tiered model of transaction processing system (TPS), where should you locate the transaction server? What should be stored on the server? What kind of processing the server should do?  
(3 marks)
- b) State **ONE** goal of Common Object Request Broker Architecture (CORBA). Describe the **THREE** broad categories of objects in CORBA.  
(4 marks)
- c) There are **THREE** limitations of mobile environment. Discuss the limitations.  
(3 marks)

**QUESTION 3 (10 marks)**

- a) Borhan is a decision maker for Pepe's Atlantic Sausage Company. He needs to decide which servers to buy for his company's expansion plan. Because there are several categories of servers, suggest to Borhan the category of servers that can do the following tasks:
- i. Provide gateway to other Local Area Networks (LANs), networks and computers.
  - ii. Manage a work group's application and data files, so that they may be shared by the group.
  - iii. Store and manage data only.
  - iv. Perform application logic processing.
- (2 marks)

**Continued ...**

b) You wanted to make a Remote Procedure Call (RPC) to a server. You received the following number of responses from the server:

- i. No response message.
- ii. Only one response message.
- iii. More than one response messages.

Discuss the possible reason why you received different responses from RPC on the server.

(3 marks)

c) Williwonk's Chocolates of Kampung Sungai Rambai makes an assortment of chocolate candy and candy novelties. The company has six in-city stores, five stores in major metropolitan airports, and a small mail-order branch. Williwonk's has a small, computerized information system that tracks inventory in its plant, helps schedule production, and so on, but this system is not tied into any of its retail outlets.

Williwonk's decides to implement a distributed database system connecting its entire retail outlets. You, as Database Manager in Williwonk's, proposes that data resources should be completely replicated across all databases in the system. Discuss your proposal using the following **FIVE** components of data allocation metric: locality of reference, reliability/availability, storage costs, performance, and communication costs.

(5 marks)

#### QUESTION 4 (10 marks)

a) Two-phase commit (2-PC) is the standard protocol for making commit and abort of a transaction atomic. Explain the steps in Phase 1 and Phase 2 of 2-PC protocol.

(5 marks)

b) Explain the steps involved in programming a Remote Method Invocation (RMI) application.

(4 marks)

c) The existing standards and platforms about the distributed system, such as RM-ODP, CORBA and DCE, mainly focus on the discrete data transmission. The introduction of multimedia computing puts a large number of new requirements on distributed system.

Explain **ONE** new requirement of distributed multimedia system (DMS).

(1 mark)

**Continued...**

**QUESTION 5 (10 marks)**

- a) Alice in the IT department at the Cho Manufacturing Company plant is planning for her company to have a Web system that would allow employees to use a secure logon to view their paychecks information. Alice wants the system to interface with health and dental insurance companies to obtain the amount remaining in the employee's account for the year. Alice proposes two-tier architecture. However, many Web systems are three-tier.

Discuss with Alice the **THREE** benefits of three-tier architecture over two-tier architecture.

(3 marks)

- b) Name the first popular commercial Network Operating System (NOS). Explain the functions of **TWO** major innovations presented in that NOS.

(3 marks)

- c) Compare the differences between Embedded SQL (ESQL) and SQL Call-Level Interface (SQL CLI) by filling in the table below.

Feature	SQL CLI (Yes/No)?	ESQL (Yes/No)?
Requires target database to be known ahead of time		
Supports dynamic SQL		
Applications must be pre-compiled and bound to database server		
Easy to debug		

(4 marks)

**QUESTION 6 (10 marks)**

- a) Discuss the different between queued and direct transaction processing.

(2 marks)

- b) Describe **THREE** similarities and **TWO** differences between CORBA and DCOM.

(5 marks)

- c) Compare between 'Strongly Connected Operation' and 'Weakly Connected Operation' in file system operation for mobile computing.

(3 marks)

**End of Page.**